PENDING CLAIMS AS AMENDED

Claims 1–57. (Canceled)

58.   (Currently Amended) A system for distributed packet-based paging, comprising:

a plurality of access nodes configured to exchange paging information over corresponding access links, the plurality of access nodes serving a plurality of end nodes, each end node being associated with, and configured to receive a page from, at least one of the plurality of access ~~node~~ nodes,

wherein ~~the system further characterized in that~~ each of the plurality of access nodes comprises at least one of a paging requirements determination ~~(PRD)~~ module and a paging resource control ~~(PRC)~~ module,

~~where~~ wherein each ~~PRD~~ paging requirements determination module ~~determines~~ is configured to determine paging requirements to send to ~~a PRC~~ the paging resource control module in communication with an intended end node of [[a]] the page, the paging requirements being determined at least in part (i) from analyzing at least one of a header field [[and]] or a payload field, using a packet classification technique, from a data message received over a corresponding access link and (ii) from stored information uniquely associated with the access node in which the ~~PRD~~ paging requirements determination module resides, and

~~where~~ wherein each ~~PRC~~ paging resource control module ~~provides PRC~~ is configured to provide paging resource control functionality in accordance with the paging requirements received from the ~~PRD~~ paging requirements determination module, where the ~~PRC~~ paging resource control functionality includes controlling at least one of (i) paging resources, (ii) paging operations, [[and]] or (iii) the generation of pages to [[an]] the intended end node.

59.   (Currently Amended) An access node for use in a system ~~with~~ for distributed packet-based paging, comprising:

~~and characterized by a plurality of access nodes configured to exchange paging information over corresponding access links and a plurality of end nodes associated with, and configured to receive a page from, at least one access node, the access node comprising at least one of:~~

a paging requirements determination ~~(PRD)~~ module; and

a paging resource control ~~(PRC)~~ module,

wherein the ~~PRD~~ paging requirements determination module ~~determining~~ is configured to determine paging requirements to send to ~~a PRC~~ the paging resource control module in communication with an intended end node of a page, the paging requirements being determined at least in part (i) from analyzing at least one of a header field [[and]] or a payload field, using a packet classification technique, from a data message received over a corresponding access link and (ii) from stored information uniquely associated with the access node in which the ~~PRD~~ paging requirements determination module resides, [[and]]

wherein the ~~PRC~~ paging resource control module ~~providing PRC~~ is configured to provide paging resource control functionality in accordance with the paging requirements received from the ~~PRD~~ paging requirements determination module, where the ~~PRC~~ paging resource control functionality includes controlling at least one of (i) paging resources, (ii) paging operations, [[and]] or (iii) the generation of pages to [[an]] the intended end node, and

wherein the access node is configured to exchange paging information with a second access node in the system for distributed packet-based paging over an access link, and to serve at least one end node, each of the at least one end node being associated with, and configured to receive the page from, at least one access node.

60.   (Currently Amended) The access node of claim 59, wherein the ~~PRD~~ paging requirements determination module further ~~includes~~ comprising:

a monitoring agent module that determines when to initiate a page to the intended end node;

a tracking agent module that tracks the location of end nodes based on received location update signals; and

an anchor paging agent module that coordinates page request signaling to the intended node.

61. (Currently Amended) The access node of claim 59, wherein the ~~PRC~~ paging resource control module further ~~includes~~ comprises:

a local paging agent module ~~that coordinates~~ configured to coordinate signaling between the ~~PRD~~ paging requirements determination module and other access nodes.

62. (Previously Presented) The access node of claim 59, wherein the exchange of the paging information is based on an Internet protocol (IP).

63. (Currently Amended) The access node of claim 62, wherein the ~~PRD~~ paging requirements determination module ~~determines~~ is further configured to determine the paging requirements based on matching IP datagrams to specific paging requirements.

64. (Previously Presented) The access node of claim 59, wherein at least one of the determined paging requirements is indicative of a quality of service (QoS).

65. (Currently Amended) The access node of claim 64, wherein the QoS ~~includes~~ comprises a page transmission timing constraint, wherein the page transmission timing constraint indicates paging latency information and specifies an upper bound on paging delay.

66. (Previously Presented) The access node of claim 64, wherein the QoS is one of a plurality of levels.

67. (Previously Presented) The access node of claim 64, wherein the QoS requires at least one of transmission of the page multiple times and retransmission of the page at least once in the absence of an acknowledgment.

68.   (Currently Amended) The access node of claim 59, wherein the determined paging requirements ~~includes~~ comprise determining whether a plurality of paging requests are associated as a group with a common quality of service indicator; and

the ~~PRC~~ paging resource control functionality ~~includes~~ comprises allocating a fraction of paging channel capacity or paging transmission opportunities to the plurality of page requests associated with the group.

69.   (Currently Amended) The access node of claim 59, wherein the determined paging requirements ~~includes~~ comprise information indicating a state of device operation in which an end node to which the page is directed is to operate after receiving the page.

70.   (Currently Amended) A method for communicating paging information ~~by an access node for use~~ in a system ~~with~~ for distributed packet-based paging, comprising:

~~and characterized by a plurality of access nodes configured to exchange paging information over corresponding access links and a plurality of end nodes associated with, and configured to receive a page from, at least one access node, the~~

exchanging paging information between a plurality of access nodes over corresponding access links;

providing a page to at least one of a plurality of end nodes associated with, and configured to receive the page from, at least one access node of the plurality of access nodes;

providing the at least one access node comprising at least one of a paging requirements determination ~~(PRD)~~ module and a paging resource control ~~(PRC)~~ module; ~~, the method comprising:~~

determining, by the ~~PRD~~ paging requirements determination module, paging requirements to send to ~~a PRC~~ the paging resource control module in communication with an intended end node of [[a]] the page, the paging requirements being determined at least in part (i) from analyzing at least one of a header field [[and]] or a payload field, using a packet classification technique, from a data message received over a corresponding access link and (ii)

from stored information uniquely associated with the access node in which the ~~PRD~~ paging requirements determination module resides;[[,]] and

controlling, by the ~~PRC~~ paging resource control module, in accordance with the paging requirements received from the ~~PRD~~ paging requirements determination module, at least one of (i) paging resources, (ii) paging operations, [[and]] or (iii) the generation of pages to [[an]] the intended end node.

71.　　(Previously Presented) The method of claim 70, further comprising:

determining, by the ~~PRD~~ paging requirements determination module, when to initiate a page to the intended end node;

tracking, by the ~~PRD~~ paging requirements determination module, the location of end nodes based on received location update signals; and

coordinating, by the ~~PRD~~ paging requirements determination module, page request signaling to the intended end node.

72.　　(Currently Amended) The method of claim 70, further comprising:

coordinating signaling, by the ~~PRC~~ paging resource control module, between the ~~PRD~~ paging requirements determination module of one access node and other access nodes.

73.　　(Previously Presented) The method of claim 70, wherein the exchange of the paging information is based on an Internet protocol (IP).

74.　　(Currently Amended) The method of claim 73, wherein the determining of the paging requirements ~~includes~~ comprises determining the paging requirements based on matching IP datagrams to specific paging requirements.

75.　　(Currently Amended) The method of claim 70, wherein the determining of the paging requirements ~~includes~~ comprises determining that at least one of the paging ~~requirement~~ requirements is indicative of a quality of service (QoS).

76.   (Currently Amended) The method of claim 75, wherein the determining of the paging requirements ~~includes~~ comprises determining that the QoS ~~includes~~ comprises a page transmission timing constraint, wherein the page transmission timing constraint indicates paging latency information and specifies an upper bound on paging delay.

77.   (Currently Amended) The method of claim 75, wherein the determining of the paging requirements ~~includes~~ comprises determining that the QoS is one of a plurality of levels.

78.   (Currently Amended) The method of claim 75, wherein the determining of the paging requirements ~~includes~~ comprises determining that the QoS requires at least one of transmission of the page multiple times and retransmission of the page at least once in the absence of an acknowledgment.

79.   (Currently Amended) The method of claim 70, wherein the determining of the paging requirements ~~includes~~ comprises determining whether a plurality of paging requests are associated as a group with a common quality of service indicator; and further comprising:

        allocating by the ~~PRC~~ paging resource control module a fraction of paging channel capacity or paging transmission opportunities to the plurality of page requests associated with the group.

80.   (Currently Amended) The method of claim 70, wherein the determining of the paging requirements ~~includes~~ comprises determining that the paging requirements ~~includes~~ comprise information indicative of a state of device operation in which an end node to which the page is directed is to operate after receiving the page.

81.   (Currently Amended) A computer program product ~~including~~ comprising:

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a computer readable medium ~~having~~ comprising instructions for: ~~a processor of an access node for use in a system with distributed packet-based paging and characterized by a plurality of access nodes configured to~~

~~exchanging~~ exchange paging information between a plurality of access nodes in a system for distributed packet based paging over corresponding access links; ~~and~~

providing a page to at least one of a plurality of end nodes associated with, and configured to receive [[a]] the page from, at least one of the plurality of access ~~node~~ nodes; ~~, the access node comprising at least one of a paging requirements determination (PRD) module and a paging resource control (PRC) module, the instructions causing the processor to:~~

~~determine, by the PRD~~ determining, by a paging requirements determination module in an access node of the plurality of access nodes, paging requirements to send to a ~~PRC~~ paging resource control module in the access node of the plurality of access nodes, in communication with an intended end node of [[a]] the page, the paging requirements being determined at least in part (i) from analyzing at least one of a header field [[and]] or a payload field, using a packet classification technique, from a data message received over a corresponding access link and (ii) from stored information uniquely associated with the access node in which the ~~PRD~~ paging requirements determination module resides, and

controlling, ~~control,~~ by the ~~PRC~~ paging resource control module, in accordance with the paging requirements received from the ~~PRD~~ paging requirements determination module, at least one of (i) paging resources, (ii) paging operations, [[and]] or (iii) the generation of pages to [[an]] the intended end node.

82.   (Currently Amended) The computer program product of claim 81, further comprising instructions for ~~causing the processor to~~:

~~determine,~~ determining, by the ~~PRD~~ paging requirements determination module, when to initiate the page to the intended end [[nodet]] node;

~~track,~~ tracking, by the ~~PRD~~ paging requirements determination module, the location of end nodes based on received location update signals; and

~~coordinate,~~ coordinating, by the ~~PRD~~ paging requirements determination module, a page request signaling to the intended end nodes.

83. (Currently Amended) The computer program product of claim 81, further comprising instructions for ~~causing the processor to~~:

coordinate signaling by the ~~PRC~~ paging resource control module between the ~~PRD~~ paging requirements determination module of one access node and other access nodes.

84. (Previously Presented) The computer program product of claim 81, wherein the exchange of the paging information is based on an Internet protocol (IP).

85. (Currently Amended) The computer program product of claim 84, wherein the instructions for ~~causing the processor to determine~~ determining the paging requirements ~~includes~~ comprise instructions for ~~causing the processor to determine~~ determining the paging requirements based on matching IP datagrams to specific paging requirements.

86. (Currently Amended) The computer program product of claim 81, wherein the instructions for ~~causing the processor to determine~~ determining the paging requirements ~~includes instructions for causing the processor to determine~~ comprise instructions for determining that at least one paging requirement is indicative of a quality of service (QoS).

87. (Currently Amended) The computer program product of claim 86, wherein the instructions for ~~causing the processor to determine~~ determining the paging requirements ~~includes instructions for causing the processor to determine~~ comprise instructions for determining that the QoS includes a page transmission timing constraint, wherein the page transmission timing constraint indicates paging latency and specifies an upper bound on paging delay.

88. (Currently Amended) The computer program product of claim 86, wherein the instructions for ~~causing the processor to determine~~ determining the paging requirements ~~includes~~

~~instructions for causing the processor to determine~~ comprise instructions for determining that the QoS is one of a plurality of levels.

89.   (Currently Amended) The computer program product of claim 86, wherein the instructions for ~~causing the processor to determine~~ determining the paging requirements ~~includes instructions for causing the processor to determine~~ comprise instructions for determining that the QoS requires at least one of transmission of the page multiple times and retransmission of the page at least once in the absence of an acknowledgment.

90.   (Currently Amended) The computer program product of claim 81, wherein the instructions for ~~causing the processor to determine~~ determining the paging requirements ~~includes instructions for causing the processor to determine~~ comprise instructions for determining whether a plurality of paging requests are associated as a group with a common quality of service indicator; and further ~~comprising instructions for causing the processor to allocate~~ comprise instructions for allocating, by the ~~PRC~~ paging resource control module, a fraction of paging channel capacity or paging transmission opportunities to the plurality of page requests associated with the group.

91.   (Currently Amended) The computer program product of claim 81, wherein the instructions for ~~causing the processor to determine~~ determining the paging requirements ~~includes instructions for causing the processor to determine~~ comprise instructions for determining that the paging requirements ~~includes~~ comprise information indicative of a state of device operation in which an end node to which the page is directed is to operate after receiving the page.

92.   (Currently Amended) An access node for use in a system ~~with~~ for distributed packet-based paging, comprising: ~~and characterized by a plurality of access nodes configured to exchange~~

        means for exchanging paging information between a plurality of access nodes; ~~over corresponding access links and~~

means for providing a page to at least one of a plurality of end nodes associated with, and configured to receive [[a]] the page from, at least one of the plurality of access nodes; access node, the access node comprising at least one of:

first means and second means;

the first means for determining paging requirements to send to a PRC module in communication with an intended end node of a page, the paging requirements being determined at least in part (i) from analyzing at least one of a header field [[and]] or a payload field, using a packet classification technique, from a data message received over a corresponding access link from another one of the plurality of access nodes and (ii) from stored information uniquely associated with the access node in which the PRD module first means resides;[[,]] and

the second means for providing PRC-paging resource control functionality in accordance with the paging requirements received from the PRD module means for determining paging requirements, where wherein the PRC-paging resource control functionality includes comprises controlling at least one of (i) paging resources, (ii) paging operations, [[and]] or (iii) the generation of pages to an intended end node,

wherein the means for providing paging resource control functionality comprises means for communicating with the intended end node of the page.

93.   (Currently Amended) The access node of claim 92, wherein the first means further includes means for determining paging requirements comprises:

means for determining when to initiate the page to the intended end node;

means for tracking a location of end nodes based on received location update signals; and

means for coordinating page request signaling to the intended end node.

94.   (Currently Amended) The access node of claim 92, further comprising wherein the means for providing paging resource control functionality comprises:

means for coordinating by the second means signaling between the first means for determining paging requirements of one access node and other access nodes.

95.   (Currently Amended) The access node of claim 92, wherein the ~~exchange of the~~ means for exchanging paging information ~~is based on~~ is configured to utilize an Internet protocol (IP).

96.   (Currently Amended) The access node of claim 95, wherein the ~~first means includes~~ means for determining paging requirements comprises means for determining the paging ~~requirement~~ requirements based on matching IP datagrams to specific paging requirements.

97.   (Currently Amended) The access node of claim 92, wherein the ~~first means includes~~ means for determining paging requirements comprises means for determining that at least one paging requirement is indicative of a quality of service (QoS).

98.   (Currently Amended) The access node of claim 97, wherein the QoS ~~includes~~ comprises a page transmission timing constraint, wherein the page transmission timing constraint indicates paging latency information and specifies an upper bound on paging delay.

99.   (Previously Presented) The access node of claim 97, wherein the QoS is one of a plurality of levels.

100.   (Previously Presented) The access node of claim 97, wherein the QoS requires at least one of transmission of the page multiple times and retransmission of the page at least once in the absence of an acknowledgment.

101.   (Currently Amended) The access node of claim 92, wherein the ~~first means includes~~ means for determining paging requirements comprises means for [[the]] determining whether a plurality of paging requests are associated as a group with a common quality of service indicator; and the ~~second means includes~~ means for providing paging resource control functionality comprises means for allocating a fraction of paging channel capacity or paging transmission opportunities to the plurality of ~~page~~ paging requests associated with the group.

102.   (Currently Amended) The access node of claim 92, wherein the ~~first means includes~~ <u>means for determining paging requirements comprises</u> means for determining that the paging requirements ~~includes~~ <u>comprise</u> information indicating a state of device operation in which an end node to which the page is directed is to operate after receiving the page.

103.   (Currently Amended) An end node for use in a system ~~with~~ <u>for</u> distributed packet-based paging<u>, comprising:</u> ~~and characterized by a plurality of access nodes configured to exchange paging information over corresponding access links and a plurality of end nodes associated with, and configured to receive a page from, at least one access node, the distributed packet-based paging system further characterized in that each of the plurality of access nodes includes at least one of a paging requirements determination (PRD) module and a paging resource control (PRC) module, where each PRD module determines paging requirements to send to a PRC module currently in communication with the intended end node of the page, the paging requirements being derived at least in part (i) from analyzing at least one of a header field~~ [[and]] <u>or a payload field, using a packet classification technique, from a data message received over a corresponding access link and (ii) from stored information uniquely associated with the access node in which the PRD module resides, and each PRC module provides PRC functionality in accordance with paging requirements received from the PRD module, where the PRC functionality includes controlling at least one of (i) paging resources, (ii) paging operations,~~ [[and]] <u>or</u> ~~(iii) the generation of pages to an intended end node:~~

~~the end node comprising:~~

means for ~~taking a first action when~~ receiving a first page from a first access node having a first [[PRC]] <u>paging resource control</u> module, where the first [[PRC]] <u>paging resource control</u> module generates the first page to the end node on the basis of a data message received by a first [[PRD]] <u>paging requirements determination</u> module; and

means for ~~taking a second action when~~ receiving a second page, different from the first page, from a second access node having a second [[PRC]] <u>paging resource control</u> module, where the second [[PRC]] <u>paging resource control</u> module generates the second page on the basis

of the same data message received by a second [[PRD]] <u>paging requirements determination</u> module,

<u>wherein the first access node and the second access node are each configured to exchange</u> <u>paging information corresponding to the first page and the second page over corresponding</u> <u>access links, and wherein each of the first and second paging requirements determination</u> <u>modules is configured to determine paging requirements to send to the first and second paging</u> <u>resource control module, respectively, currently in communication with an intended end node of</u> <u>the first and second page, respectively, the respective paging requirements being derived at least</u> <u>in part (i) from analyzing at least one of a header field or a payload field, using a packet</u> <u>classification technique, from a data message received over a corresponding one of the access</u> <u>links and (ii) from stored information uniquely associated with the first or second access node,</u> <u>respectively, in which the respective paging requirements determination module resides, and</u> <u>each respective paging resource control module is configured to provide paging resource control</u> <u>functionality in accordance with paging requirements received from the respective paging</u> <u>requirements determination module, where the paging resource control functionality includes</u> <u>controlling at least one of (i) paging resources, (ii) paging operations, or (iii) the generation of</u> <u>pages to the respective intended end node.</u>

104. (Currently Amended) A method for receiving a page ~~by an end node~~ in a system [[with]] <u>for</u> distributed packet-based paging<u>, comprising:</u> ~~and characterized by a plurality of access nodes~~ ~~configured to exchange paging information over corresponding access links and a plurality of end~~ ~~nodes associated with, and configured to receive the page from, at least one access node, the~~ ~~distributed packet-based paging system further characterized in that each of the plurality of~~ ~~access nodes includes at least one of a paging requirements determination (PRD) module and a~~ ~~paging resource control (PRC) module, where each PRD module determines paging requirements~~ ~~to send to a PRC module currently in communication with the intended end node of the page, the~~ ~~paging requirements being derived at least in part (i) from analyzing at least one of a header field~~ ~~and payload field, using a packet classification technique, from a data message received over a~~ ~~corresponding access link and (ii) from stored information uniquely associated with the access~~

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node in which the PRD module resides, and each PRC module provides PRC functionality in accordance with paging requirements received from a PRD module, where the PRC functionality includes controlling at least one of (i) paging resources, (ii) paging operations, and (iii) the generation of pages to an intended end node.

the method comprising:

taking a first action when receiving a first page from a first access node having a first [[PRC]] paging resource control module, where the first [[PRC]] paging resource control module generates the first page to the end node on the basis of a data message received by a first [[PRD]] paging requirements determination module; and

taking a second action when receiving a second page, different from the first page, from a second access node having a second [[PRC]] paging resource control module, where the second [[PRC]] paging resource control module generates the second page on the basis of the same data message received by a second [[PRD]] paging requirements determination module,

wherein the first access node and the second access node are each configured to exchange paging information corresponding to the first page and the second page over corresponding access links, and wherein each of the first and second paging requirements determination modules is configured to determine paging requirements to send to the first and second paging resource control module, respectively, currently in communication with an intended end node of the first and second page, respectively, the respective paging requirements being derived at least in part (i) from analyzing at least one of a header field or a payload field, using a packet classification technique, from a data message received over a corresponding one of the access links and (ii) from stored information uniquely associated with the first or second access node, respectively, in which the respective paging requirements determination module resides, and each respective paging resource control module is configured to provide paging resource control functionality in accordance with paging requirements received from the respective paging requirements determination module, where the paging resource control functionality includes controlling at least one of (i) paging resources, (ii) paging operations, or (iii) the generation of pages to the respective intended end node.

105.   (New) The end node of claim 103, further comprising means for providing location update signals,

wherein the first access node and second access node are each further configured to determine when to initiate the page to the intended end node, to track a location of respective end nodes based on the location update signals, and to coordinate page request signaling to the intended end node.

106.   (New) The end node of claim 103, wherein at least one of the paging requirements is indicative of a quality of service (QoS).

107.   (New) The end node of claim 106, wherein the QoS comprises a page transmission timing constraint, wherein the page transmission timing constraint indicates paging latency information and specifies an upper bound on paging delay]

108.   (New) The end node of claim 106, wherein the QoS requires at least one of transmission of the page multiple times and retransmission of the page at least once in the absence of an acknowledgment.